

43-16

GENERAL FEATURES OF THE DEPOSITS

Deposits of scheelite (calcium tungstate) were discovered in the spring of 1942 in the Copper Mountain district, Wyo., an area that had not previously been considered a potential source of tungsten. The deposits occur on the south slope of Copper Mountain, in the Bridger Range, where they form a belt half a mile to a mile wide that trends east and west for about 3 1/2 miles. They are about 13 miles north-northeast of Shoshoni and 10 miles east of the Boyaan dam in the Wind River Canyon (fig. 1). Mr. S. Warren Hobbs, of the Geological Survey, United States Department of the Interior, examined the deposits in June 1942. In the course of the Department's investigation of domestic tungsten resources, he prepared detailed topographic and geologic maps of the Black Mountain and Hoodoo Creek groups of claims (figs. 2 and 4), and examined with an ultraviolet lamp all the scheelite showings that were then known. As no development work had been undertaken at the time of this examination, geologic inferences were necessarily based on a study of outcrops alone.

Since the examination of these deposits by the Geological Survey, two other agencies of the Government have acted to further the development of the deposits. The Bureau of Mines, United States Department of the Interior, has undertaken systematic exploration to determine the underground extent of the ore bodies. The Public Roads Administration, Federal Works Agency, has constructed roads giving access both to the Hoodoo Creek area, at the east end of the deposit, and to the Black Mountain area, at the west end. A small shipment of ore has been made to the agent of the Metals Reserve Company in Salt Lake City.

The tungsten deposits are found in a series of gneisses and schists, which are cut by numerous basic dikes, quartz veins, and intrusive bodies of granite pegmatite. All these rocks are of pre-Cambrian age. Crystals and disseminated grains of scheelite occur in lenses and pods that lie parallel to the foliation and bedding in the metamorphic rocks, the distribution of the scheelite being apparently controlled in some way by differences in the composition of the original sedimentary beds. The larger and economically more important deposits occur in a lime-silicate rock containing chiefly zoisite, lesser amounts of quartz and minor amounts of carbonate, which forms lenses and layers in the predominant gray schist. Other deposits are found in quartz veins and still others in a dark green or black schist.

The relation of the principal Copper Mountain deposits to a definite stratigraphic horizon, and the character of the minerals, suggest that the deposits may have been formed by replacement of impure calcareous layers in the metamorphic rocks, accompanied by the introduction of considerable silica. The mineralization appears to have taken place after the intrusion of the basic dikes and before the intrusion of the late granite and accompanying pegmatites.

The scheelite in the Black Mountain group of claims occurs in narrow, discontinuous veins or in isolated pockets and lenses, both in the lime-silicate rock and in quartz veins. On the Romur claim, which is probably the best one in this group, small pockets and lenses of scheelite are exposed in three principal localities within a single zone in the silicate rock. The middle locality contains the best ore, which was estimated by Mr. Hobbs to contain from 2 to 3 percent of WO₃. Other pockets of ore may occur on the Romur claim outside of the three localities mentioned, but they are probably so erratically distributed that it would be difficult to find them.

The deposits on the Hoodoo Creek claims are of two types, both occurring in the lime-silicate rock. The first type, which includes the deposits on the Stardust and Comet claims, consists of a series of elongate lenses and pods that contain a small volume of relatively high grade ore. The other type, which includes the deposits on the Dawn claim, consists of broader, more massive bodies, that contain a larger volume of lower-grade ore. On both the Stardust and the Comet claims the ore bodies lie in two nearly parallel zones, which are farther apart on the Comet than on the Stardust property. The northern zone on both claims contains ore estimated to average between 2 and 3 percent of WO₃. As this zone has about the same physical characteristics, and occurs at about the same stratigraphic position in the two claims, other lenses may be localized within that part of the zone between the exposures on the two claims. The ore on the Dawn claim is found at the same general stratigraphic horizon as that on the Stardust and Comet claims, and rocks at this horizon might prove to be ore-bearing elsewhere in the district.

The ore zone on the Dawn claim is broader and shorter than those of the Stardust and Comet claims. East's dikes and a dike of pegmatite cut it into wedge-shaped segments. Scheelite, much of it in coarse crystals, is widely scattered throughout the rock, and pockets and streaks contain from 0.5 to 1 percent WO₃. These concentrations may be sufficiently numerous to permit the mining of the whole zone as low-grade ore, but it is doubtful whether that would be feasible unless the zone contains some ore of higher grade than any that has yet been found.

The Firefly claim contains the only other deposits that appeared promising at the time of the examination. The scheelite-bearing zone on this claim is wider and more continuous, but of lower grade, than the others in the district, containing on the average only a fraction of 1 percent of WO₃. One part of this deposit may, however, contain a large volume of low-grade but usable ore. The other claims in the district examined in the summer of 1942 appear to have only minor showings at the surface.

Many of the scheelite deposits are lenticular and discontinuous, and exploration and mining of them would therefore be difficult. Although no ore had been blocked out at the time of the examination, the deposits contain some lenses that are large enough and rich enough to justify development. Systematic search for possible extensions of these bodies might lead to the discovery of other lenses that are not now exposed.



FIG. 1 INDEX MAP SHOWING LOCATION OF COPPER MOUNTAIN DEPOSIT

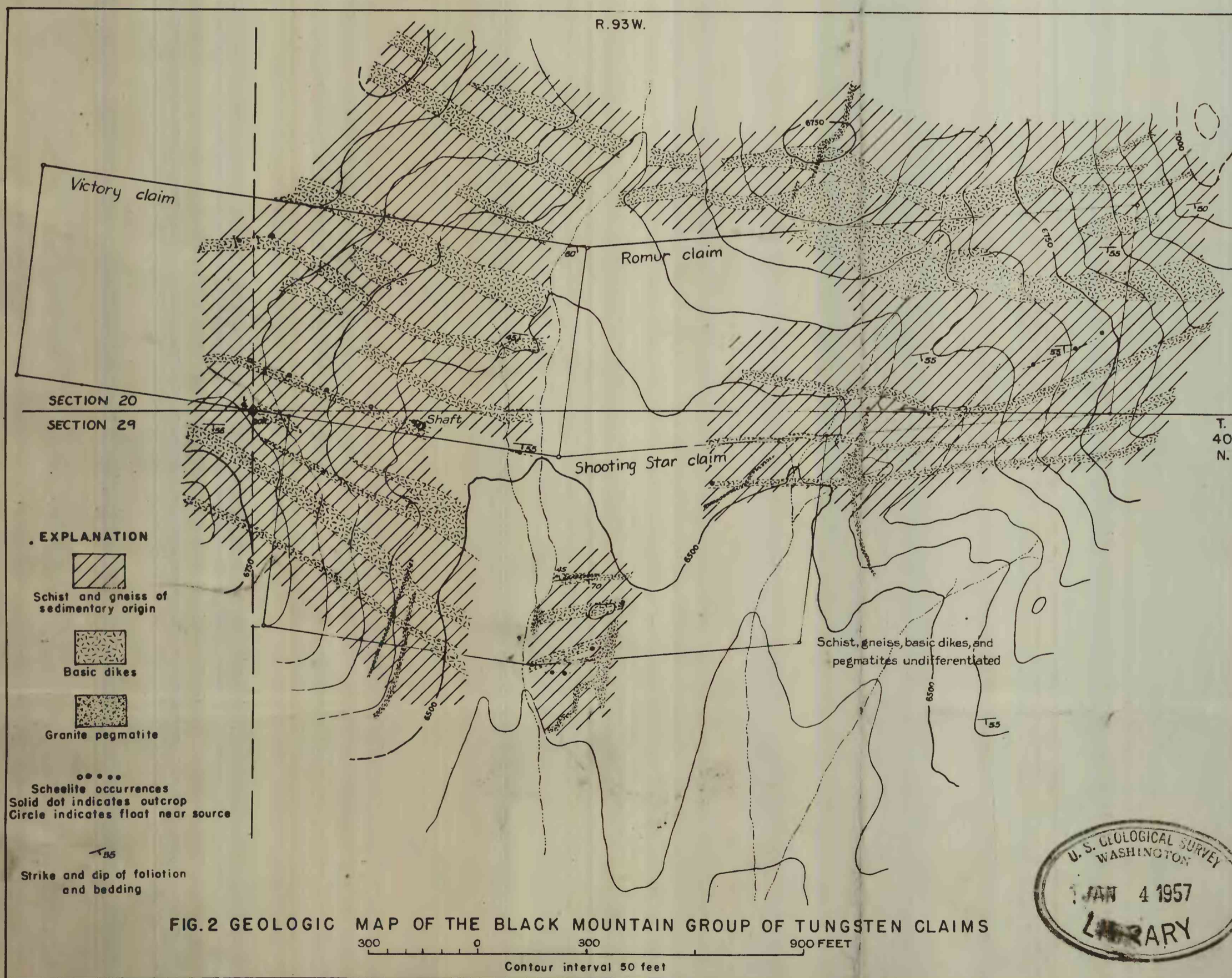


FIG. 2 GEOLOGIC MAP OF THE BLACK MOUNTAIN GROUP OF TUNGSTEN CLAIMS

TUNGSTEN DEPOSITS OF COPPER MOUNTAIN, FREMONT COUNTY, WYOMING

by Samuel Warren Hobbs, 1911-

Wyoming (Copper Mountain tungsten area). Geol. 1:3,500. 1943.

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